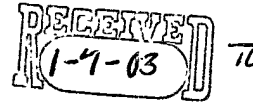


**Official****IN THE CLAIMS:**

A clean version of all pending claims is as follows.

- B1
1. A compact optical tracking system for magnetic tape, comprising:
    - a magnet head assembly;
    - a positioning actuator for changing the position of the magnetic head assembly; and
    - an optical servo module structure for outputting a position signal to the positioning actuator, causing the positioning actuator to change a position of the magnetic head assembly, wherein the optical servo module structure comprises at least one optical servo module, comprising:
      - and optical beam source for emitting an optical beam;
      - a detector for detecting an optical beam reflection; and
      - an optical beam interference composition<sup>108</sup> for interfering with the optical beam and producing a predetermined pattern on a target.
  2. The compact optical tracking system recited in claim 1, wherein each optical servo module contains at least a first and second detector for detecting an optical beam reflection.
  3. The compact optical tracking system recited in claim 2, wherein the magnetic head assembly comprises a read and a write head; and the optical servo module structure is affixed to the magnetic head assembly between the read and write heads, and the optical servo module structure faces a front side of the magnetic tape.

4. The compact optical tracking system recited in claim 2, wherein the optical servo module structure comprises a plurality of optical servo modules.

5. The compact optical tracking system recited in claim 4, wherein the optical servo module structure is affixed to a side of the magnetic head assembly and oriented to an angle of tape wrap of the magnetic tape.

6. The compact optical tracking system recited in claim 4, further comprising:  
a yoke assembly, wherein the optical servo module structure is affixed to a yoke assembly, and the optical servo module structure faces a back side of the magnetic tape.

7. The compact optical tracking system recited in claim 6, further comprising:  
a grating assembly, wherein the grating assembly comprises at least one reference grating used as a target for the predetermined pattern emitted from the optical source within the optical servo module.

8. (ONCE AMENDED) A compact optical tracking system for magnetic tape, comprising:

- a magnetic head assembly;
- a positioning actuator for changing the position of the magnetic head assembly; and
- an optical servo module structure for outputting a position signal to the positioning actuator, causing the positioning actuator to change a position of the magnetic head assembly, wherein the optical servo module structure comprises at least one optical servo module, comprising:
  - an optical beam source for emitting an optical beam;
  - a detector for detecting an optical beam reflection; and

an optical beam interference composition for interfering with the optical beam and producing a predetermined pattern on a target;

wherein each optical servo module contains at least a first and second detector for detecting an optical beam reflection;

wherein the optical servo module structure comprises a plurality of optical servo modules;

further comprising a yoke assembly, wherein the optical servo module structure is affixed to a yoke assembly, and the optical servo module structure faces a back side of the magnetic tape;

further comprising a grating assembly, wherein the grating assembly comprises at least one reference grating used as a target for the predetermined pattern emitted from the optical source within the optical servo module;

further comprising an outboard reference grating on the grating assembly, wherein the outboard reference grating is affixed to the grating assembly past the extent of the magnetic tape; and

an outboard servo module, wherein the predetermined pattern emitted from the optical source within the outboard servo module uses the outboard reference grating as a target.

9. The compact optical tracking system recited in claim 8, wherein the positioning actuator is configured between the yoke assembly and the magnetic head assembly, and wherein only the magnetic head assembly is moved by the positioning actuator.

10. The compact optical tracking system recited in claim 8, wherein the positioning actuator is configured adjacent to both the yoke assembly and the magnetic head assembly, wherein the yoke assembly and the magnetic head assembly are moved by the positioning actuator.

11. The compact optical tracking system recited in claim 8, wherein one of the reference grating and outboard reference grating contain a reference index on the reference grating.

12. The compact optical tracking system recited in claim 8, wherein the grating assembly is affixed to the magnetic head assembly between the read and write heads.
13. The compact optical tracking system recited in claim 8, wherein the outboard reference grating is affixed adjacent to one of the read and write heads.
14. The compact optical tracking system recited in claim 8, further comprising:  
a fine positioning actuator for adjusting the magnetic head assembly relative to one of the reference grating and the outboard reference grating.
15. The compact optical tracking system recited in claim 11, further comprising:  
a fine positioning actuator for adjusting the magnetic head assembly relative to the reference index on one of the reference grating and the outboard reference grating.
16. The compact optical tracking system recited in claim 8, further comprising:  
a linear actuator for loading magnetic tape onto the magnetic head assembly.
17. The compact optical tracking system recited in claim 8, further comprising:  
a rotary actuator for loading magnetic tape onto the magnetic head assembly.
18. The compact optical tracking system recited in claim 4, wherein the optical beam is a laser beam.
19. The compact optical tracking system recited in claim 4, wherein the optical beam interference composition is a hologram.

20. The compact optical tracking system recited in claim 4, wherein the optical beam interference composition is two or more parallel slits.

21. A compact optical tracking system for magnetic tape, comprising:

a magnet head assembly comprising:

a magnetic head and

an optical servo module structure for outputting a position signal to the positioning actuator, causing the positioning actuator to change a position of the magnetic head assembly, wherein the optical servo module structure comprises at least one optical servo module, each comprising:

an optical beam source for emitting and optical beam;

a detector for detecting an optical beam reflection; and

an optical beam interference composition for interfering with the optical beam and producing a predetermined pattern on a target.

22. The compact optical tracking system recited in claim 21, wherein the optical servo module structure is affixed to a side of the magnetic head assembly and oriented to an angle of tape wrap of the magnetic tape.

23. The compact optical tracking system recited in claim 21, wherein the magnetic head further includes a read head section and a write head section and a cavity between the read head section and the write head section, wherein the optical servo module structure is positioned in the cavity between the read head section and the write head section.

24. (ONCE AMENDED) An optical tracking system for aligning a recording medium, comprising:

at least one source of coherent electromagnetic radiation;  
an interference generating device;

wherein the interference generating device causes the superposition of coherent radiation emitted from the at least one source to form at least two spots on the recording medium;

wherein the two spots are formed at different distances from a track on the recording medium;

wherein the direction and magnitude of offset of the track is determined based on the relative locations of the at least two spots with respect to the track.

25. The system of Claim 24 wherein the track is a servo track.

26. The system of Claim 24 wherein the relative locations of the at least two spots are determined by measuring reflected intensity of the at least two spots.

27. (NEW CLAIM) The optical tracking system of Claim 24, wherein the at least two spots comprise a first group of spots and a second group of spots, wherein the intensity of the first group of spots is averaged and the intensity of the second group of spots is averaged.

#### REMARKS

Claims 1-26 are pending in the present application. Claim 27 was added. Examiner is thanked for allowance of Claims 8-17. Claim 24 was amended to correct an informality, and its scope has not been altered. Reconsideration of the claims is respectfully requested.